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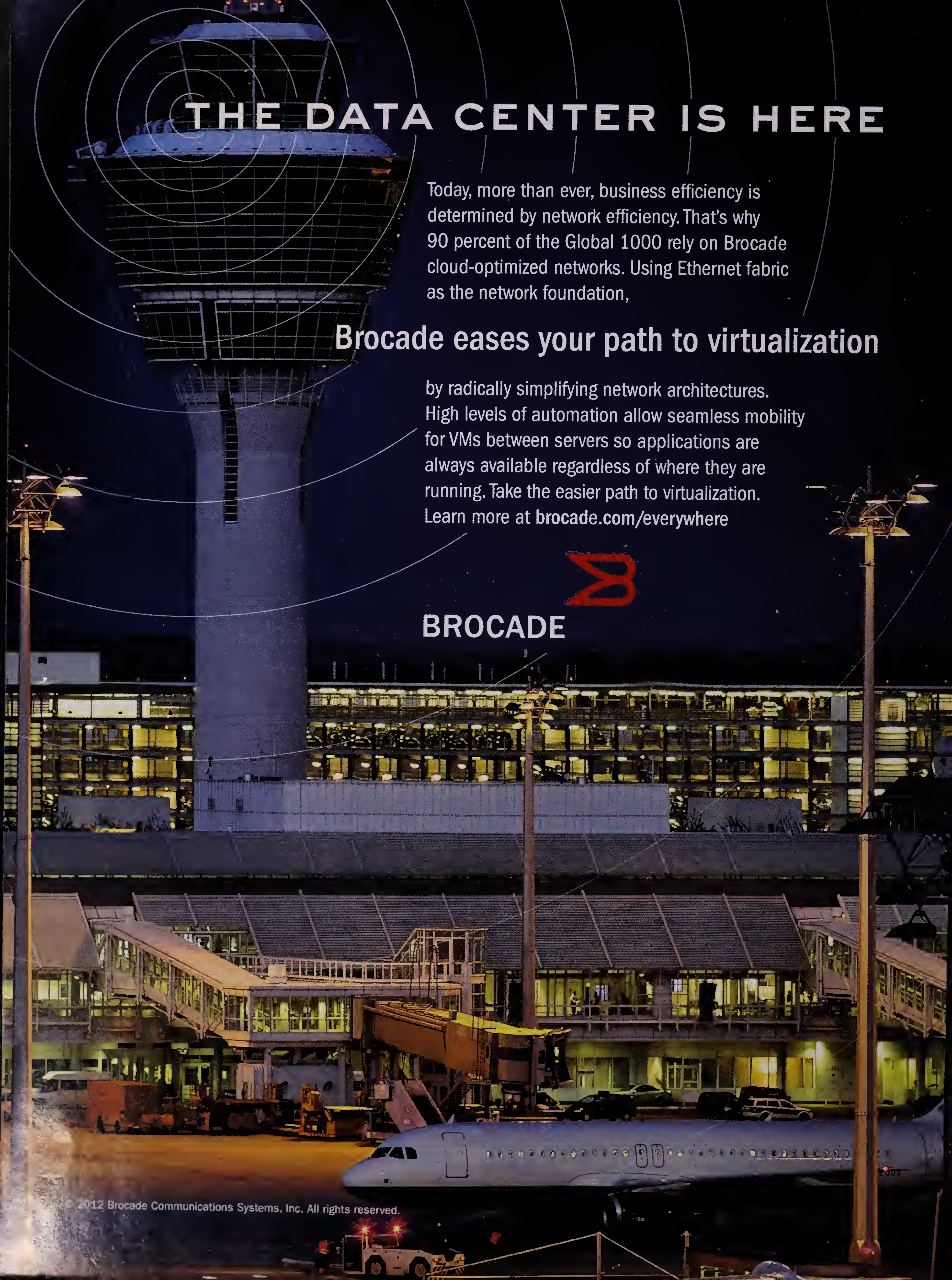

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THIS ISSUE | 07.16.2012 [VOL. 46, NO. 13 $5/COPY]

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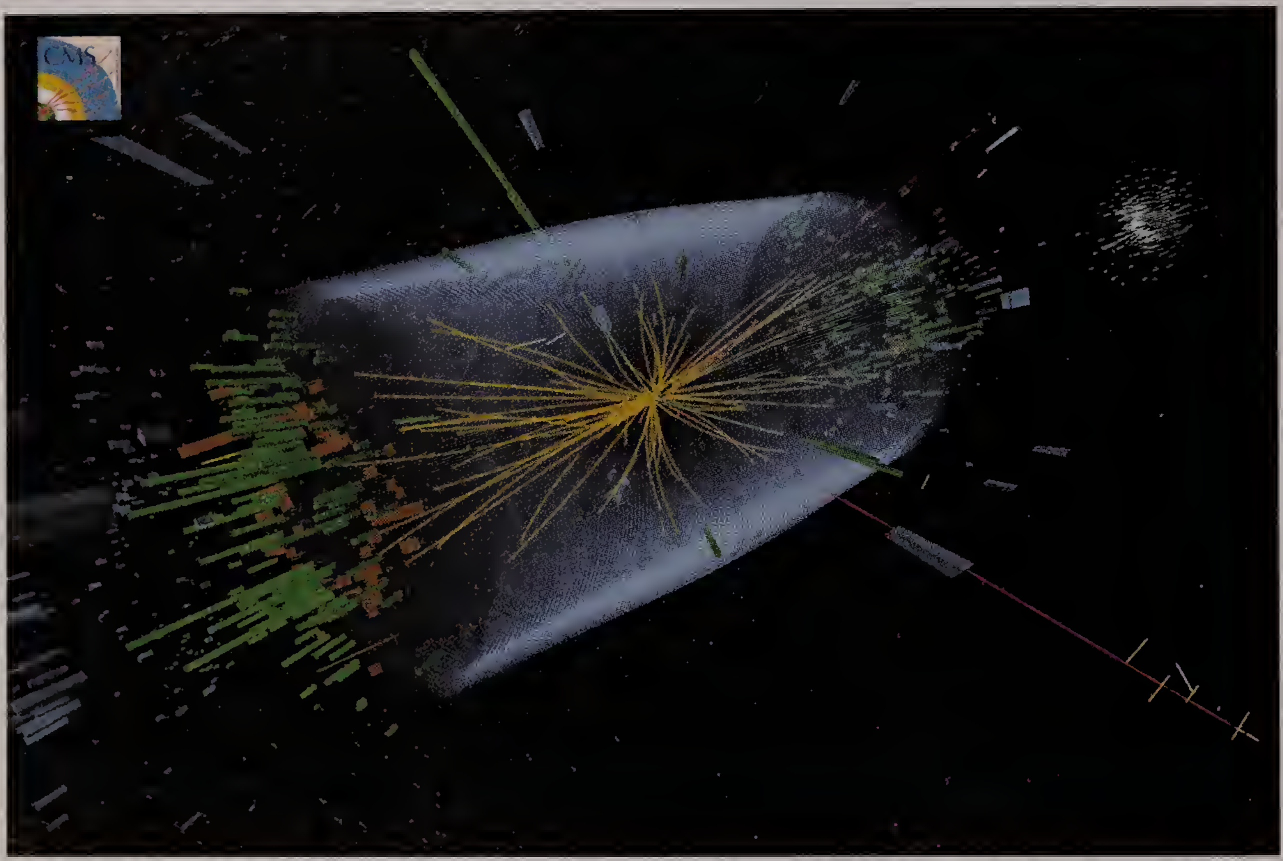

PHOTO COURTESY CERN

EMERGING TECHNOLOGY

Global Grid Helps CERN Find 'God Particle'

SCIENTISTS AT CERN, the European Organization for Nuclear Research, announced that they have observed a particle that might turn out to be the long-sought Higgs boson, or "God particle," thought to be part of the explanation for why matter has mass. And a worldwide network of computers played a key role in the discovery.

The particle is the heaviest boson ever found. If it is indeed the Higgs boson, it would give scientists a more complete understanding of the nature of the universe.

Scientists will have a clearer picture later this year after the Large Hadron Collider, the largest particle accelerator in the world, provides more data. "We now have more than double the data we had last year," said Sergio Bertolucci, CERN's director of research and computing, in a statement. "That should be enough to see whether the trends we were seeing in the 2011 data are still there."

CERN's 17-mile-long collider generates hundreds of millions of particle collisions each second. Recording, storing and analyzing these collisions represents a massive challenge; the collider produces roughly 20 million gigabytes of data each year.

CERN stores that data partly on the premises in Geneva, but has to distribute roughly 80% to data centers all around the world through the Worldwide LHC Computing Grid.

That network is key to CERN's research, said Rolf-Dieter Heuer, CERN's director general. "Without the worldwide grid," he said, "this result would not have happened."

– Loek Essers, IDG News Service

PRIVACY

Twitter Issues First Report on Data Requests

Twitter has issued its first report about the requests it received this year from various governments for user information, and its responses.

The U.S. government asked for information about far more users than any other country, according to the report. Between Jan. 1 and June 30, Twitter received 679 requests for information from U.S. authorities pertaining to 948 users. Japan came in a distant second, with 98 requests concerning 147 users.

Most Twitter users are in the U.S., according to social media consultancy Semiocast. Japan is the third-largest Twitter user, after Brazil.

Twitter provided some or all of the information sought in 75% of the U.S. government's requests. The company provided data in response to half the requests from the Netherlands and to one-third of the requests from Japan and Australia.

Most requests were connected to criminal cases, Twitter said, adding that requests so far this year have exceeded the total for all of 2011.

Governments recognize that social networks store a great deal of information that could be useful to law enforcement, said Eva Galperin, a freedom of expression coordinator at the Electronic Frontier Foundation. Therefore, she noted, the companies are "extremely powerful" and are "capable of de facto censorship."

- CAMERON SCOTT, IDG NEWS SERVICE

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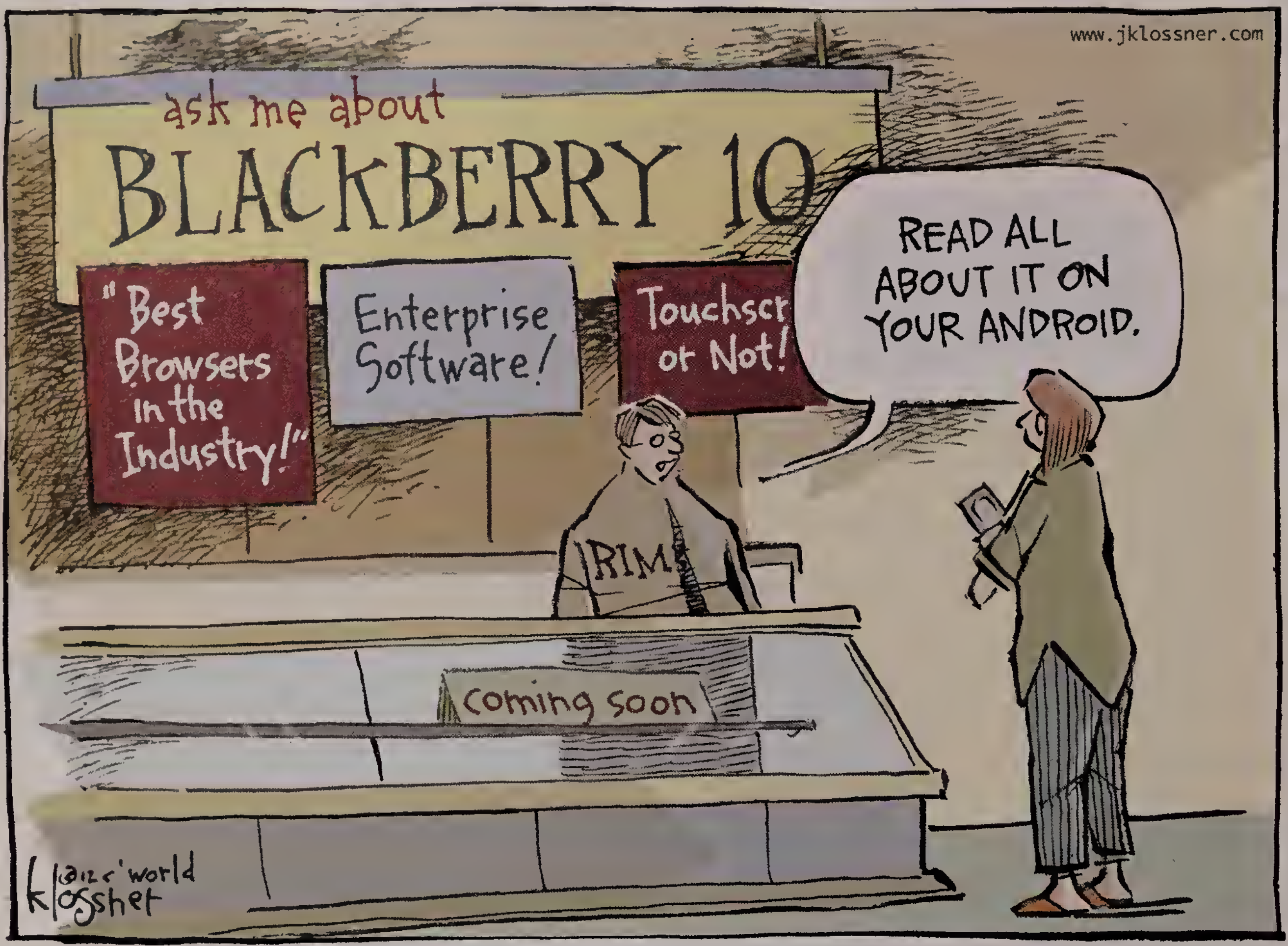
BETWEEN THE LINES

By John Klossner



IT CAREERS

Manufacturers Up IT Spending, Not Jobs

MANUFACTURING EMPLOYMENT has been a bright spot for the economy, but IT workers aren't benefiting, a new report finds.

Research firm Computer Economics found in its latest study that more than half of all manufacturers are holding IT head count level or cutting staff, even as they increase IT spending.

This is happening even as the White House continues to point to manufacturing as a solid plus for the economy. Alan Krueger, chairman of the president's Council of Economic Advisers, wrote last month that the U.S. has added nearly 500,000 manufacturing jobs since January 2010; he said that was the "strongest growth for any 28-month period since April 1995."

But IT managers may have a different view. From January through April of this year, Computer Economics surveyed more than 200 employers of all sizes in the U.S. and Canada. It found that around 33% of IT shops in manufacturing plan to increase head count, compared with 40% of IT organizations in all sectors.

IT operational spending, meanwhile, is up around 4% in manufacturing companies, compared with 2.2% across all industries.

Frank Scavo, president of Computer Economics, believes the reluctance of manufacturers to add staff results from the increased use of outsourcing and from worries about the economy overall. IT managers are preparing for the possibility that they might have to adjust spending before their budget years end, he said.

This caution might be warranted, he added, based on new data from the Institute for Supply Management. The group, which measures factors including new orders, order backlog and inventory levels, reported that economic activity in the manufacturing sector contracted for the first time since July 2009, though the overall economy grew for the 37th consecutive month.

Other groups that analyze IT employment nationally across all sectors are also seeing some worrisome signs, but overall IT employment continues to increase month to month.

– Patrick Thibodeau

Micro Burst

[illegible]

Apple agreed to pay a small Chinese company

$60M

to acquire the iPad trademark in China.

SOURCE: GUANGDONG PROVINCE HIGHER PEOPLE'S COURT

COMPUTING PLATFORMS

'Wearable' Tech In the Spotlight At Google I/O

At its recent developers conference in San Francisco, Google touted the new prototype of its Google Glass computerized eyeglasses.

The Android-powered eyeglasses are equipped with a processor, memory, a camera, GPS sensors and a display screen.

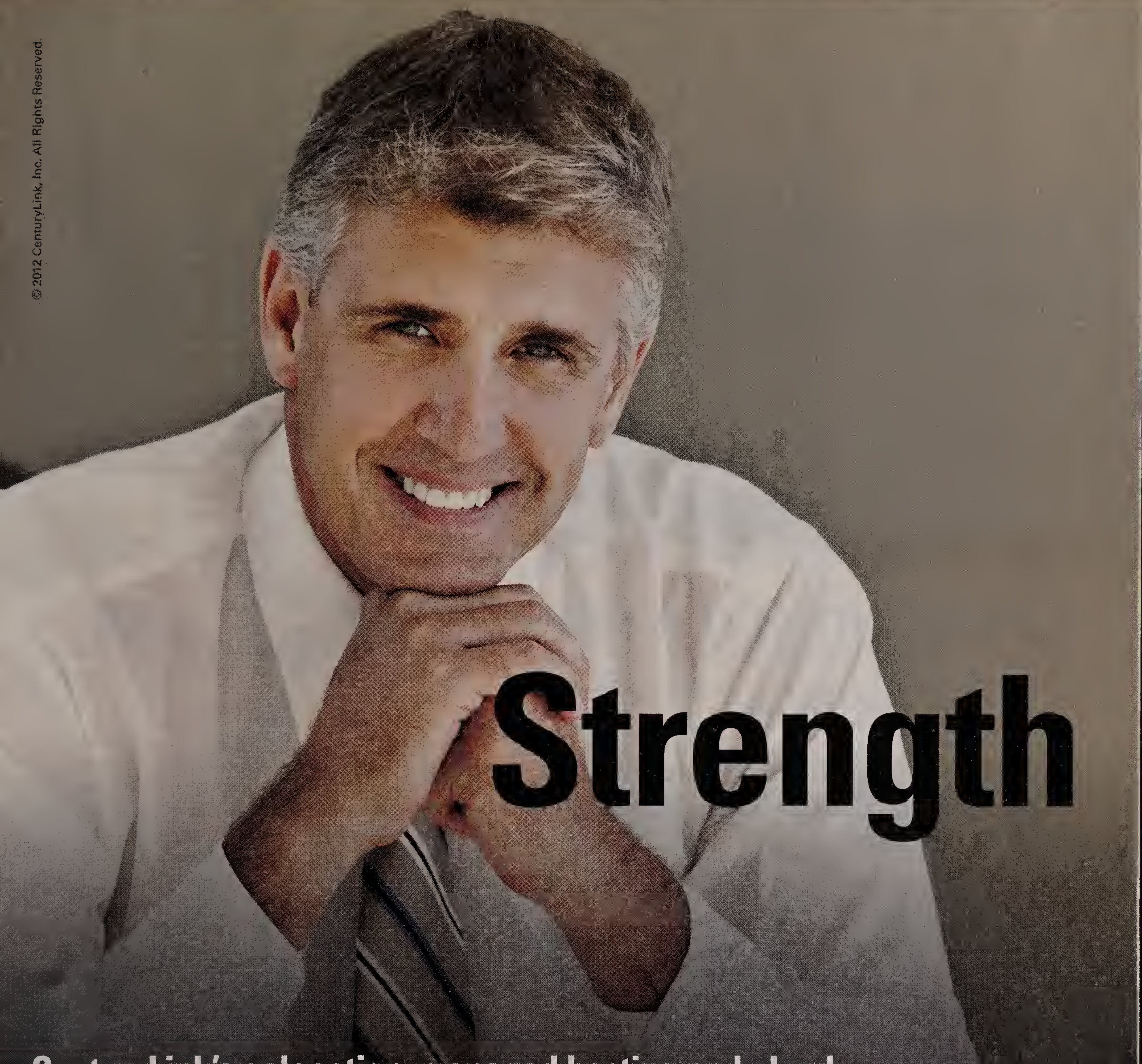
Speaking at Google I/O, Google co-founder and CEO Sergey Brin said that someday computers will be worn – whether incorporated into glasses or in a piece of jewelry. Some observers concur.

Patrick Moorhead, an analyst at Moor Insights and Strategy, said that the U.S. military, especially the Special Forces units, already uses wearable computers for communications and GPS capabilities.

Rob Enderle, an analyst at Enderle Group, pointed out that Google Glass and other wearable computers could be useful in the workforce, "for tasks on factory floors or other places where folks need to use computers and their hands at the same time."

Research into wearable computers has been going on at MIT for over a decade, and Apple sells a wristband to turn an iPod Nano into a wristwatch. It remains to be seen whether Google's involvement will now help push the notion forward.

– SHARON GAUDIN



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Firefighters check for hotspots in the aftermath of the Waldo Canyon fire in Colorado Springs.

Disaster Recovery Gets New Urgency

Changing weather patterns pose new threats to corporate data centers and cloud computing host sites. By Lucas Mearian

INCREASING NUMBERS of weather-related disasters — violent storms, wildfires that have ravaged more than 2 million acres in the Rocky Mountains, and drought conditions affecting some two-thirds of the United States — should have IT executives scurrying to update their disaster recovery plans.

The message to IT managers from business continuity experts is a familiar one: Put backup data centers in diverse, far-flung locations, and make sure your cloud service providers maintain geographically dispersed hosting facilities.

Those calls have been largely ignored in the past, and it's unclear whether the changing weather patterns will spur corporate executives to take more notice now.

Disaster recovery experts say that the intensifying weather conditions are significantly increasing the dangers facing IT operations at businesses of all sizes.

"Last year was the worst year we've had in the history of disasters," said Al Berman, executive director of the Disaster Recovery Institute, an industry group.

In recent years, cloud computing champions have contended that buying hosted services was a way to guarantee that applications would stay up and running at all times and that data would remain safe and secure.

That claim, though, has increasingly been proven false. The latest example came late last month when severe thunderstorms in the mid-Atlantic states caused temporary shutdowns of cloud computing services, prompting at least one company to quickly adopt a new strategy.

WhatsYourPrice.com ended its 18-month relationship with Amazon.com's Amazon Web Services (AWS) unit after a storm-related outage at an AWS data center shuttered the online dating service's website twice for two-hour periods.

The outages prompted a flood of complaints from many of WhatsYourPrice.com's 400,000 active members and damaged the dating site's reputation for reliability, said CEO Brandon Wade.

WhatsYourPrice.com, named for the site's approach of having users buy and sell first dates, moved quickly to deploy servers in two colocation facilities, and hired another cloud provider, Fiber Hub, for data backup, Wade said.

Other websites affected by the Amazon outage included those of Netflix, Instagram and Pinterest.

In a statement, Amazon acknowledged that several of its "data centers had their utility power impacted" by the storms, and that in one, "the redundant power [did] not operate correctly." The company contended that the outage impacted "a single digit percentage of our [Elastic Compute Cloud] instances in the US-East Region."

Experts also noted that despite past warnings, many major corporations still insist on maintaining IT operations in a single building within a corporate campus or on using third-party cloud computing services hosted only in nearby facilities.

Berman said he doesn't understand why so many companies, including several major banks, have long insisted on maintaining all IT operations at headquarters, clinging to the belief that data is safest when it's nearby. Executives at these companies have ignored warnings that a single regional disaster — something that is becoming ever more likely — can take out an entire IT infrastructure.

"If they were just smart enough to move their servers from one [region] to another, they'd avoid these issues," he said.

"I advise my clients that you can't depend on any one thing," said Dan Olds, an analyst at Gabriel Consulting Group. "You can't depend on the cloud unless you have something to fall back on." ◆

> Last year was **the worst year** we've had in the history of disasters.
>
> — AL BERMAN, EXECUTIVE DIRECTOR, DISASTER RECOVERY INSTITUTE

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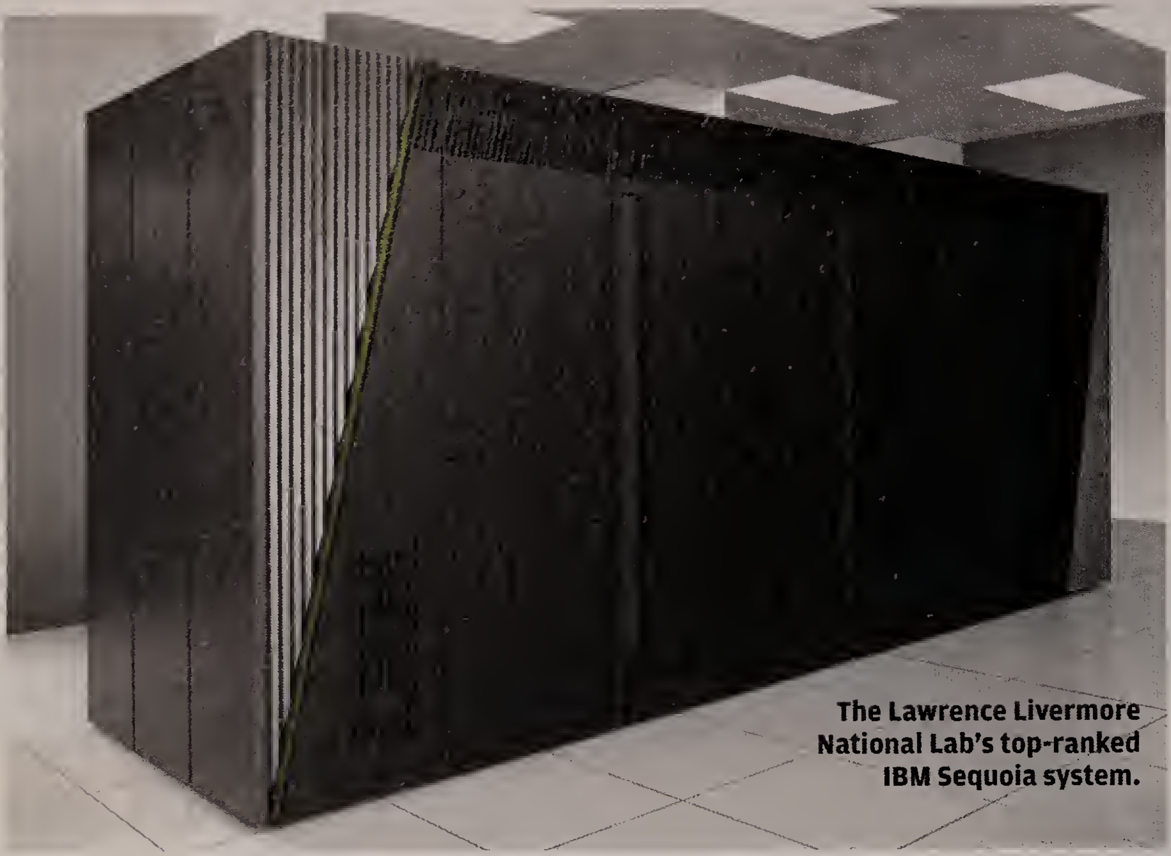

The Lawrence Livermore National Lab's top-ranked IBM Sequoia system.

U.S. Regains Supercomputer Lead

New IBM water-cooled systems dominate the list of the most powerful computers, most of which are now used for commerce, not research. By Patrick Thibodeau

THE U.S. is once again home to the world's most powerful supercomputer, rebounding after it was knocked out of the top spot by China two years ago and Japan last year.

The latest Top500 list of supercomputers, released last month, also marks a return of European technology in force, as the continent accounted for four of the first 10 systems on the list, and reveals that these ever-powerful computers are increasingly used for commercial purposes.

Even though U.S. technology has dominated the Top500 rankings since researchers first compiled the list in 1993, the two-year absence from the top spot had hit a national nerve.

President Barack Obama mentioned China's top-ranked supercomputer in two separate speeches, including last year's State of the Union address, and Secretary of Energy Steven Chu, a Nobel Prize winner in physics, warned that America's innovation leadership was at risk.

Though competitive threats to U.S. technology leadership remain — for example, China launched its fourth manned space mission in June, just months after the U.S. ended its shuttle program — the U.S. is back on top of the supercomputer world, at least for now.

The Linux-based IBM Sequoia system that tops the latest list is powered by Power BQC 16-core processors running at 1.6GHz, and mostly relies on architecture and parallelism, not Moore's Law, to achieve speeds of 16.32 sustained petaflops. Sequoia, an IBM BlueGene/Q, is installed at the U.S. Department of Energy's Lawrence Livermore National Laboratory.

"We're at the point where the processors themselves aren't really getting any faster," said Michael Papka, deputy associate director for computing, environment and life sciences at the DOE's Argonne National Laboratory, which runs a similar IBM system that placed third on the list. "Moore's Law is generally slowing down and we're [getting faster speeds] by parallelism."

"The classic trick of waiting for Moore's Law to come along and help you out really doesn't exist anymore," added David Turek, vice president of exascale computing at IBM.

Both the Sequoia supercomputer and the Mira system housed at the Argonne lab are among the first IBM supercomputers to use water-cooling technology.

The most striking thing about the list, though, to Jack Dongarra, a professor of computer science at the University of Tennessee and a leader of the Top500 program, is that more than half of the machines on it aren't deployed in research, in academic settings or by government.

"More than half are used by industry," he said. "Industry gets it. These machines are important; they can provide some competitive advantage."

Europeans, in particular, are moving aggressively to build out commercial supercomputing capability, despite all the troubles their economies are facing. "The Europeans weren't keeping pace," Dongarra noted. "Today, we see a resurgence."

The European machines in the top 10 — two in Germany, one in Italy and one in France — are new, he said.

IBM made 213 of the systems on the list, including five of the top 10. Hewlett-Packard was the second most well-represented computer maker, with 141 of the 500 systems. Nearly 75% of the systems listed run on Intel processors, and 13% use AMD chips. ◆

Mikael Ricknäs *of the IDG News Service contributed to this story.*

> "Industry **gets it.** These machines are important; they can provide some competitive advantage
>
> – JACK DONGARRA, COMPUTER SCIENCE PROFESSOR, UNIVERSITY OF TENNESSEE

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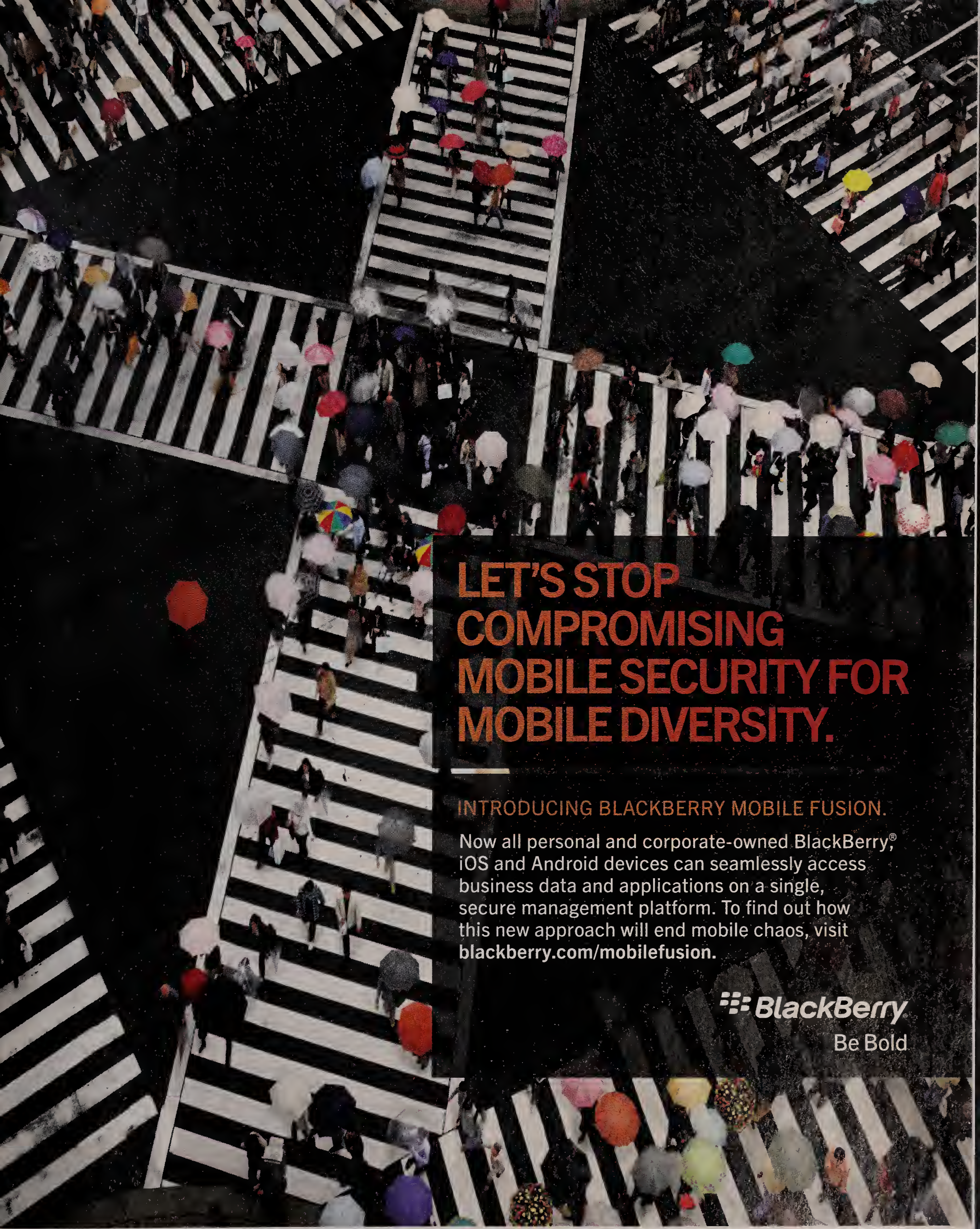
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THE Grill

Juan Montes

MoMA's CTO on art, IT and making the world-class museum more participatory

Prior experience: CIO and VP of operations at Japan Society; IT positions at The New York Times Co. and Columbia University.

Family: A wife and two children, ages 7 and 4.

Do you have any pastimes? I listen to music. I meditate. I go to the movies with my wife. I am a movie junkie.

What's your favorite movie? *The Deer Hunter.*

What languages do you speak? I was born in Cuba, so I speak Spanish fluently. I have a good working knowledge of Japanese, and a decent reading knowledge of German from studying philosophy. I studied Latin in high school, and I took three years of Homeric Greek as well.

PHOTOS COURTESY OF THE MUSEUM OF MODERN ART

***JUAN MONTES** regularly visited the Museum of Modern Art while he was a student at Regis High School, a tuition-free Jesuit college-preparatory school for high-potential young men in the New York metropolitan area. He remembers being drawn to Picasso for the mathematical qualities he found in the artist's work. Now he's chief technology officer at MoMA, having taken over the position in November, and directs a staff of about 50. Here Montes speaks about how technology, art and philosophy are all part of his day-to-day work.*

You have a bachelor's degree in philosophy from Harvard. How did you end up in technology? The kind of philosophy I studied was very technical and very much related to math, so there was a natural connection from the very beginning. Then I got into programming and got into technology that way.

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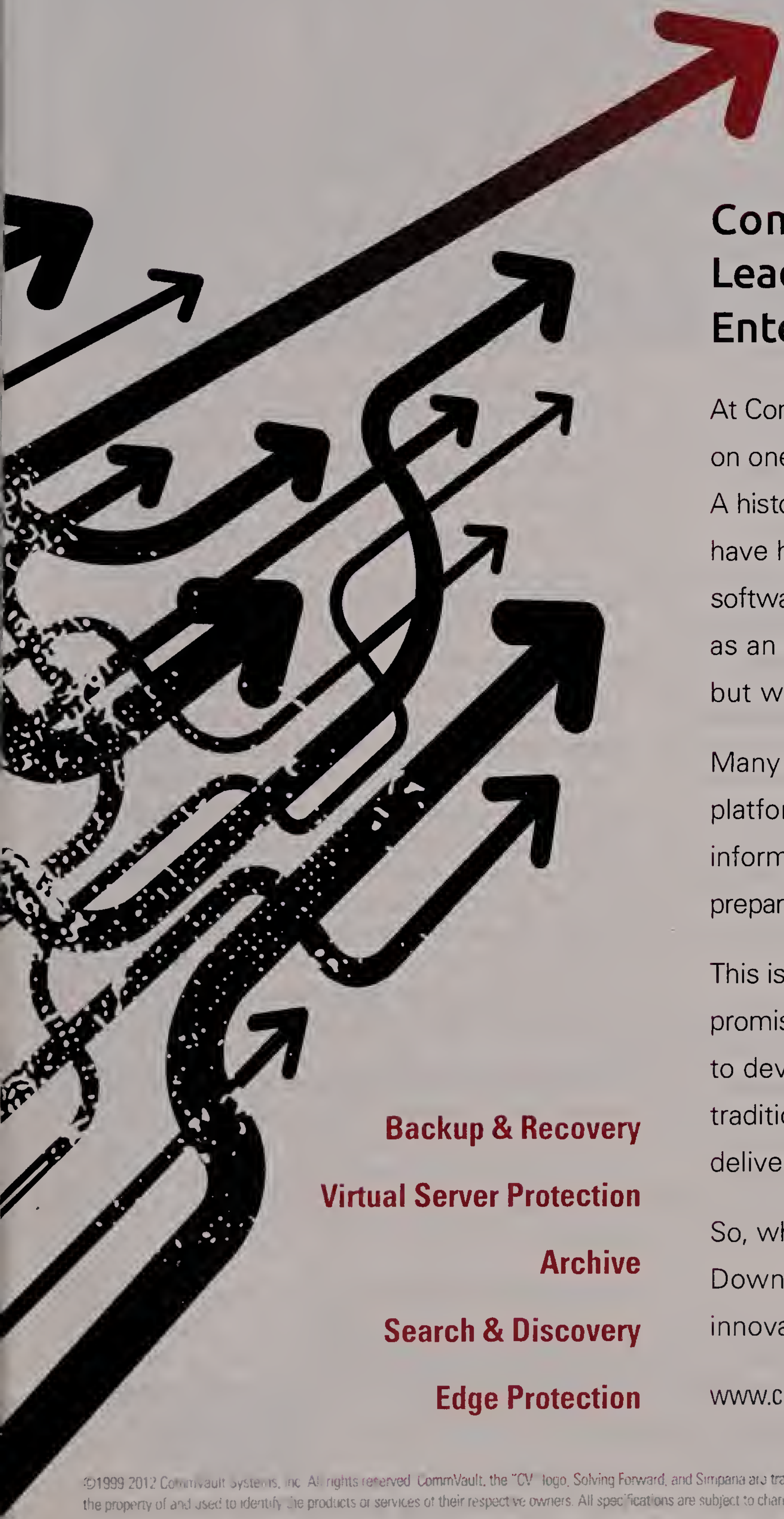

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> **One of the things I've done is figure out partnerships.** You have to develop those linkages and build those bridges yourself, go out of your way to talk to people.

What makes IT at MoMA unique from IT at a typical business, or even another nonprofit? There is such a multiplicity of activities. We have the curatorial activities — basically working with intellectuals, helping them deliver, organize and enhance things, whether it's an exhibition or information on the website or about a collection. We also have a thriving e-commerce and retail operation, and we have special events that our audio/visual area gets heavily involved in. As people who enable others to do various things, IT has to navigate the different cultures and weave them into a whole.

You replaced Steve Peltzman, who left the CIO position to join Forrester Research. Why are you CTO rather than CIO? There are so many C-level titles. We already had a chief investment officer, so we were trying to disambiguate titles. You can argue whether I'm dealing more with information or technology. I'm really doing both. My role is to help MoMA achieve its goals through technology.

What's been most rewarding about stepping into the CTO role? Working on the technology strategy of the organization, especially at a time when technology is so important to what the museum does. More and more of the contemporary art that comes in is digital, so we need to figure out how to preserve it. How do we ensure 20 years from now we can put on Exhibition X with the [correct] components? I get to work with conservation on these questions.

What is the most difficult part of your job? There are a lot of different constituencies with requirements and needs, and the vast majority of those are real and important. We have limited resources, so how to prioritize and how to be inclusive, so you're not leaving out any group? How do we make people think of IT as a strategic department, as the team that will help you figure out a way around your particular issue or roadblock? That's the tricky part.

What has your approach been? It's funny you use the word *approach* — looking at approaches and being comfortable, that's the No. 1 thing studying philosophy has given me. I use it daily. One of the things I've done is figure out partnerships. You have to develop those linkages and build those bridges yourself, go out of your way and talk to people. But you're only one person, so you have to instill that in your team. The directors under me know I want them to form strong partnerships throughout the organization. In some ways, it's more important at their level because that's where a lot of tactical decisions are being made.

What are your priorities now for IT? We're constantly thinking about extending the reach of the museum. How do we engage audiences that can't come here? And for audiences that do come here, how do we make their experiences better? How do we make the museum experience more participatory? So rather than just being a place where people come for information and people see us as an expert source — which we are and will continue to be — how do we give people a chance to engage with other people interested in modern art and with us directly?

Any major IT initiatives? We're just finishing up a [CRM] system that gives us a 360-degree view of our membership in one place. It contains all sorts of data that we had before but was very difficult to aggregate.

How did the project come about? You're not just trying to build a tool that works; you want to build a tool that works on a specific problem a user has. So we had to get an understanding of what the issues were from the membership and development department. Then it was a very careful planning process for migrating data from platforms where it was hard to unlock its value, to platforms where everything is right there for you. That project was started in the middle of 2010, and significant pieces of it are done.

You didn't say anything about technology. What does that say about your job? It says something about the role of the CTO. If you were to talk to directors in my area, you'd hear a lot more about the nuts and bolts. I love that stuff, too. Not only is it fascinating, it has an aesthetic beauty about it.

Technology has aesthetic beauty? There's the mathematical precision of what we do, and there's a tremendous beauty to that, the speed and the celerity with which computers can calculate, and the simplicity of it, when it works.

– Interview by Computerworld *contributing writer*
Mary K. Pratt *(marykpratt@verizon.net)*

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Power of Convergence

New research demonstrates the significance of converged infrastructure as businesses race to out-innovate the competition.

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The relationship between business and IT is often strained. Business demands responsiveness, especially to new requests. Whereas IT struggles to simply keep existing applications running and deliver on agreed-upon SLAs. The solution is a converged IT infrastructure.

As technology becomes increasingly pervasive, many enterprises see a widening gap between what the business demands and what IT can deliver. IT simply can't keep up with the speed of business—lacking the agility to respond to business requests in a timely manner.

Fortunately, this all-too-common scenario does not have to be the reality. The answer for many organizations rests with deployment of a converged infrastructure environment. Converged infrastructure is a set of automatically provisioned IT services and applications utilizing interoperable resource pools of servers, storage, networking, security, power and cooling—all managed through a common management platform.

Done right, a converged infrastructure accelerates IT by shifting precious resources to innovation, readying for the cloud and delivering value to the business faster, explains Duncan Campbell, vice president of marketing for HP Converged Infrastructure. "To compete in the age of 'instant everything,' organizations need an IT infrastructure that enables agile and rapid service delivery while driving out costs. That's what converged infrastructure helps IT organizations accomplish."

And, moving to a converged infrastructure environment does not necessarily translate to a complete rip and replace, especially when embracing an open, standard-based solution set. "Organizations have a significant investment in IT already and understandably want to maximize their existing assets," he says.

THE SURVEY SAYS

The tangible benefits of moving toward a converged infrastructure are quite clear in the recent IDC Research report, Measuring the Business Value of Converged Infrastructure in the Data Center. Findings point to these three concepts:

- **Rapid response:** Study results show that within a traditional environment it takes an average of 20 days to respond to a business request for something new. However, in a converged environment the response time drops to five days, yielding a 75 percent reduction in service delivery time.
- **Innovative shift:** Within traditional IT environments, operations consumes more than 70 percent of IT labor resources; less than 30 percent is used to enhance productivity, competitiveness and customer experience. Converged environments allow the IT organization to flip these numbers and focus on delivering the innovative solutions businesses require to compete.
- **Uptime:** In a converged infrastructure, businesses go from an average of 10 hours of unplanned downtime to less than 20 minutes. That's a 97 percent reduction in downtime—an extremely important benefit as employees and customers demand access to IT systems 24x7, 365 days a year.

"As the study results demonstrate, the only way to effectively shift resources from operations to innovation is through infrastructure convergence," says Campbell.

BOTTOM LINE

As organizations become increasingly focused on utilizing technology to achieve a competitive advantage, infrastructure convergence is inevitable. The approach will ultimately define an organization's ability to succeed or fall behind. So having experienced partners like HP and Intel by your side—delivering open, standards-based solutions designed for convergence—can make all the difference.

To learn more about how your IT organization can benefit from a converged infrastructure environment today, and for additional research results, download the IDC white paper at **www.convergedinfrastructure.com**

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*Substantiation: HP white paper, *Measuring the Business Value of Converged Infrastructure in the Data Center*, October 2011.
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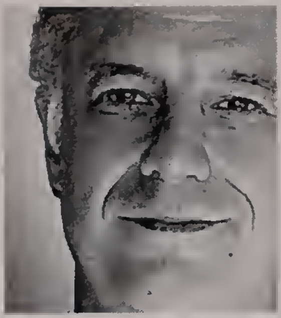

OPINION

BART PERKINS

Who Owns Your Tweets?

PhoneDog v. Kravitz demonstrates that laws have not kept pace with the evolution of social media.

WHEN NOAH KRAVITZ was PhoneDog's editor in chief, he created a Twitter account and began tweeting for the company. PhoneDog claims that, after Kravitz left in October 2010, he continued to use its corporate account to tweet on behalf of himself and his new employer, merely changing the name on the account. Now PhoneDog is suing to reclaim that Twitter account and the list of followers tied to it. It's seeking $340,000 in damages.

This dispute demonstrates that laws haven't kept pace with the evolution of social media. Courtney Hunt, a principal of business consultancy Renaissance Strategic Solutions, says organizations must take steps to protect themselves until legislation or case law clarifies legal parameters. Specifically, employers should do the following:

Clarify and document agreements. It's crucial to have employment agreements, confidentiality agreements and noncompetes for all employees, but it's particularly important to have them for anyone who communicates with the public on the organization's behalf. These documents should make it clear that corporate social media accounts are company property and have quantifiable value.

Update corporate communication guidelines. Typically, only a few people are authorized to speak publicly for an organization. PR controls what they say and how they say it. Because social media emerged as a form of personal communication before being adopted for corporate marketing, most policy manuals don't define how employees should use it on behalf of the organization.

Create internal procedures. Make sure an authorized representative registers all corporate social media accounts. Don't take over accounts that employees have registered personally. State clearly who is authorized to post what information. And consider having more than one person post, so staff turnover doesn't have a noticeable impact on the organization's communication style.

Plan an ethical endgame. Treat departing employees professionally. Salespeople, recruiters and others are hired partially for their industry contacts. During their employment, they should be expected to enter job-related contacts in the CRM system. However, it's unreasonable to expect employees to turn over all of their professional connections when they leave. Don't ask them to relinquish their LinkedIn accounts or other personal social media accounts. News of unfair treatment travels fast. Acquiring a reputation as a bad workplace hurts morale and hinders recruiting, particularly when departing employees are connected to your organization's customers and business partners.

PhoneDog v. Noah Kravitz raises interesting questions. If PhoneDog wins, will it be awarded the 17,000 followers Kravitz had when he departed, or the 24,000 he has now? Would PhoneDog even be able to retain them? Most social media users follow individuals, not corporations.

Social media law desperately needs definition and clarity — ASAP. At a minimum, the ruling in the PhoneDog case should try to clarify ownership issues and financial valuation for followers. Until legal standards and precedents are established, do your best to stay out of court by creating corporate guidelines to address your organization's needs.

The legal quicksand surrounding social media ensnares corporations and individuals alike. If you currently tweet, post or blog about an organization, make sure you have appropriate authorization. In addition, insist on documented agreements stating how followers will be handled should you leave. Moreover, keep your personal and professional followers clearly separated. Or else you could soon be tweeting the blues. ◆

Bart Perkins is managing partner at Louisville, Ky.-based Leverage Partners, which helps organizations invest well in IT. Contact him at BartPerkins@LeveragePartners.com.

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Global Gears

By interlocking business services, companies gain customer knowledge, efficiency and speed. *The payoffs are huge, but laying the groundwork for IT standardization is no easy task.* **BY ROBERT L. MITCHELL**

[redacted]

EVERY MONDAY MORNING, executives at Procter & Gamble's Cincinnati headquarters file into an elliptically shaped conference room known as the Business Sphere, where giant video screens wrap around curved walls displaying detailed, interactive reports on the consumer products maker's operations.

Business unit executives in similar rooms worldwide, assisted by business intelligence specialists from P&G's Global Business Services group, participate by videoconference as the groups collectively review the numbers for some 300 beauty and household cleaning brands sold in 180 countries. There's no arguing over whose numbers are right — every business unit follows the same business processes and uses the same applications and analytic models. Executives are expected to come to the meeting prepared to drill down into those numbers, explain trends, identify underlying factors and devise an action plan.

"[It's] analytics to the extreme," says CIO and group president of Global Business Services Filippo Passerini.

As the growth in global business activity continues to increase, P&G and other businesses are re-engineering IT operations around centralized IT infrastructures. By consolidating and standardizing business processes and applications, these businesses

RICHARD BORGE ILLUSTRATION

expect to achieve IT cost savings, economies of scale and a competitive advantage. Having a set of interlocking IT business services worldwide can add value and deliver consistency to the business.

But selling the idea can mean stepping through a few political minefields, and it won't work everywhere. The benefits of consistency must be balanced against the need for localized applications and business processes.

"No matter where you are in the cycle, you should be targeting global business services," says Bobby Cameron, an analyst at Forrester Research. "The agility, flexibility and knowledge of the customer can't be done with disparate data and systems."

But getting to that point is an evolutionary process, IT executives say. Many organizations are still struggling to get through basic IT infrastructure consolidation and standardization efforts, and the political waters get deeper when such projects move beyond the core enterprise applications, such as financials and HR, and into front-office applications such as sales and marketing.

"There's always a tension between what should be done locally and what should be done globally," says Dave Kamath, vice president and CIO at IDEX, a manufacturer of pumps, dispensing equipment and other engineered industrial products, which has been consolidating front- and back-office applications in 27 countries worldwide.

> No matter where you are in the cycle, you should be targeting global business services.
>
> **BOBBY CAMERON,** ANALYST, FORRESTER RESEARCH

P&G's system, for example, is the culmination of a decade-long global shared IT services effort that started with the centralization and consolidation of core IT infrastructure and ERP systems, and the optimization and standardization of associated business processes worldwide.

Most businesses measure the initial payoff of IT globalization initiatives in IT cost savings and infrastructure-level operational efficiencies. By that metric, Passerini says, P&G cut its IT costs by one-third and saved $1 billion over the past nine years. But the global business services built on top of those common platforms and processes are becoming a vital competitive differentiator as well as a potential revenue-generator.

At P&G, the goal is to innovate faster in order to compete in an industry where the speed to market for new products is accelerating. The business services, ranging from strategic sourcing to product innovation, "have dramatically compressed our time to market," Passerini says.

Similar efforts are under way at The Vanguard Group, Bank of America and Equifax. Here's what IT executives at those companies have to say about building — and selling — a global IT services operation.

Centralize, Optimize, Innovate

IDEX, which is headquartered in Lake Forest, Ill., and does business in 80 countries, started by consolidating its global IT infrastructure and core ERP applications into a private cloud. But the real value came from building within that cloud common sets of shared application services called platforms, which business units that sell into the same markets can use collaboratively to provide more comprehensive offerings to their joint customers. For example, several lines of business sell components that go into subassemblies used by manufacturers of healthcare diagnostics equipment. "Now we're talking about a system rather than individual component sales," says Kamath.

"We gained cost efficiencies through a shared services function, but that pales in comparison to the opportunity we have to innovate and capture additional market share in new geographies and markets," he says.

The shared services platform at IDEX evolved in several stages. Kamath says the company started by creating a consolidated global enterprise IT infrastructure based on a private cloud. Next, it deployed a unified suite of core enterprise applications before layering on the platforms, which handle functions such as sales and marketing. For the latter, IDEX deployed a multitenant implementation of Microsoft Dynamics CRM.

The configuration offers the efficiencies of a shared infrastructure while providing each group of companies with its own collaborative work environment. "This gave them the ability to present the collective capabilities of our companies to our channels," Kamath says.

Meanwhile, the IT team worked with the business to standardize business practices. "We standardized everything from the business processes to how we look at the data," he says.

A Shift to Innovation

P&G took a different approach. It started by consolidating its data centers, creating a robust global network and centralizing around a single global instance of its SAP ERP software. "You can't standardize without centralizing first," says Passerini.

The IT group then outsourced the hosting and management of that infrastructure and began focusing on optimizing and consolidating its business processes. "That changed the whole focus from 70% running the operations to 70% innovating on the operations," says Jim Fortner, vice president of IT development operations at P&G.

Employees of the P&G Global Business Services team are embedded within the business units, where they leverage that common infrastructure to create business services in the areas of data modeling, data visualization and the use of virtual reality for everything from product testing to designing production lines.

P&G now focuses on leveraging that common platform as a "strategic enabler" for more advanced global business services, some of which cross departmental boundaries. For example, Global Business Services created an employee workplace service that automates everything required to get a new hire up and running. What used to require calls to corporate facilities and employee services groups is now managed as one seamless business process. "We provision their office and their IT and deliver that as a service," Fortner says.

Model of Consistency

Vanguard, a Valley Forge, Pa.-based investment management firm, began centralizing its global operations after realizing that its lineup of investment products, which are available in 80 countries, was similar in every global market. Executives saw that the business could gain efficiencies by centralizing and standardizing its data centers and applications. "If the mission is the same, the products are the same and you want consistency in the business, you should go toward a centralized model," says Carol Dow, CTO and principal

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of global investment systems at Vanguard. But IT wasn't the one pushing the drive toward centralization. "It was the business," she says.

Today, Vanguard is in the process of consolidating its data center in Australia into its U.S. operations. The project has presented challenges because of distance and time-zone issues. But bandwidth costs have declined, and technologies such as a global MPLS network, content delivery networks, WAN optimization devices and virtual desktops have evolved to the point where the technical barriers have fallen, Dow says.

Centralization has brought benefits in terms of both consistency and economies of scale. "From a negotiation standpoint, we can optimize on infrastructure, people, vendors and products," Dow says.

> "Exceptions and incremental steps are barriers to this. If you go incremental, you don't get it done.
>
> **CATHERINE BESSANT,**
> GLOBAL TECHNOLOGY AND OPERATIONS EXECUTIVE, BANK OF AMERICA

GERLINDE & MICHAEL PHOTOGRAPHY

Accelerating Speed to Market

Equifax, an Atlanta-based financial services firm with operations in 18 countries, struck a balance between meeting local needs and standardizing the business's core, in-house applications, says CIO David Webb. "We launched a program to create a bureau in a box with one code base we deploy all over the world, but with the core here and a wrapper for each country," he says.

Prior to that, the $1.96 billion company was using 25 different programming languages and 25 different databases. Now, all of the back-office elements are centralized and consistent. "It's the user experience and mobile [interfaces] that vary," Webb says.

Equifax executives realized this was possible because 80% of what the business units do is the same regardless of the country in which each operates. Now, Webb says, new product introductions take days or weeks instead of months. "We are in the data manufacturing business," he says. "It's about speed to revenue and speed to market."

But Webb says globalizing IT operations is also about total cost of ownership and economies of scale. "I don't want local countries negotiating with different [service providers]. We may be a small player in one locality, but when you roll that up, we are a large player. It's all about pricing at the end of the day," he says.

Controlling the urge to customize development is essential, says P&G's Fortner. "Our partners would love to create custom code for everything," he says, so P&G sets expectations with partners up front. "We want frugal innovation at one-third of the cost, with a much faster time to implementation, and following application standards across the enterprise," he says. Custom code is allowed only when it creates a competitive advantage.

But not everything that should be consolidated *can* be consolidated; sometimes regulatory requirements, contractual issues or other hurdles get in the way. For example, many of Equifax's customers have contracts stating that their data must stay in their home countries. That puts limits on what Equifax can do with the data. "We could have gone out and renegotiated, but the business didn't want to do that," Webb says. Instead, Equifax will wait and make changes when it's time to renew contracts.

Webb also cautions about "lift and shift" consolidations of data centers as the first step toward globalization. Most of the efficiencies realized by doing that could be achieved through careful use of vendors and remote monitoring and management, he says. The consolidation should come only after application portfolios have been rationalized and business processes have been streamlined. "This is the one model that makes sense," he says.

Biting Off Big Change

At Bank of America, global technology and operations executive Catherine Bessant succeeded by setting big goals. The $94.4 billion bank does business in more than 100 countries. Bessant says her organization, which works out of the bank's Charlotte, N.C., headquarters, is about 80% of the way through a multiyear IT globalization effort. The bank consolidated 10 of its 55 data centers in 2010 and expects to retire another nine, plus 50% of its applications, by 2014.

Bessant didn't get this far by being timid. "Exceptions and incremental steps are barriers to this. If you go incremental, you don't get it done," she says. Bessant acknowledges that her team's goal of reducing applications by 50% "set people's hair on end," but she says that specifically hitting that target isn't important;

Five Steps to IT Globalization

IDEX's Approach

- Consolidate onto a private cloud infrastructure.
- Globalize core enterprise network services and applications.
- Standardize business processes.
- Establish common front-office systems and other software platforms to enable integration of business units that sell into the same markets and to create collective synergies that will help increase revenue.
- Transition in stages from a federated structure to a multicultural, virtual IT organization that's centrally managed but dispersed globally so as to be close to each business unit.

P&G's Approach

- Consolidate infrastructure.
- Centralize services.
- Standardize applications.
- Optimize business processes.
- Move toward strategic sourcing.

– ROBERT L. MITCHELL

it's OK if the final figure is 40% or 60% — as long as it doesn't end up at 5%. "People need to understand the order of magnitude of change you're after," she says.

P&G's Fortner offers this advice: It's OK to have big goals, but start with a small project. Begin by forming a shared services business unit that reports directly to the CIO. Conduct an inventory of business processes that cut across the enterprise and identify the ones that offer the most value to the company by standardizing. Then begin with a defined project in an application area such as HR or financial services. "Do a smaller core set first, prove it and go from there," says Fortner.

A good place to start is with accounting systems, says Forrester's Cameron. "Politically, that's easier to get done," he says.

Going Beyond the Core

Moving standardization efforts beyond core applications is where things can get sticky. IT must strike a balance between what should be consistent across the company and what needs to be differentiated — a process that Bessant calls "paint-by-numbers vs. Picasso."

"We try not to create a Picasso every time we undertake development, but not every project fits the paint-by-numbers approach," she says. In the end, differentiated applications are allowed only where absolutely necessary to the business. And all applications must follow standards — for example, they all must have the ability to support multiple currencies from day one, instead of building for the U.S. dollar first and adding support for other currencies later.

At P&G, the battle was just beginning after core applications had been centralized and consolidated, says Passerini. With 99% of core applications on the global SAP system, the CIO turned his attention to all of the other applications used in the business and was surprised to find that only 27% were standardized. In just one area — the management of promotional funds for retail customers — P&G had 55 different systems in place. Over the past four years, P&G has gradually increased its overall standardization rate to 80%, and Passerini says he expects that figure to eventually hit 100%.

Other businesses may find that some applications must remain local, says Cameron. Sourcing, manufacturing and distribution planning often go global, while the sales, marketing and final distribution functions frequently remain local. "That local-global balance is the magic," he says, but it's often more of a political problem that needs to be solved, rather than a technical one.

The final step at IDEX, Kamath says, has been to build a global virtual organization — a multicultural team that's distributed geographically in order to stay close to the customer, but that reports back to the central shared services organization. The virtual team has staff members in a range of locations, including Europe, China, India and Canada. "They need to be dispersed geographically, to be able to work independently and to be able to work with individuals from different cultures," Kamath says.

At Equifax, Webb's team carefully considered which roles would move to headquarters and which needed to stay local. "The relationship management piece, project management, business analysts and requirements analysis need to stay in-country," he says. "All of the rest can be questioned and analyzed for globalization."

> **Always start with business-relevant, concrete benefits that your business partners can see, feel and touch.**
>
> **FILIPPO PASSERINI,** CIO, PROCTER & GAMBLE

IT's Sales Job

The process of globalizing is as much about management as it is about technology, IT executives say. And no IT globalization effort will succeed unless IT can show an immediate benefit to the business. "You cannot force standardization now with the promise that five years from now the world will be better," Passerini says. "The business must understand the immediate return as well as the good that comes later. Always start with business-relevant, concrete benefits that your business partners can see, feel and touch."

P&G built up its shared services business by clearly articulating the business benefits that line up with the company's strategic business goals, he says.

Kamath agrees that globalization initiatives can't just be dictated to business unit leaders. At IDEX, every operation moved into the private cloud infrastructure — a step that was transparent to the business — but Kamath took a more measured approach to transitioning each business unit onto the new application platforms. The platforms delivered clearly understandable business benefits, but each unit came aboard "when they were ready," he says.

Evangelizing is critical, Webb notes. "You need to spend a lot of time socializing why the change is a good thing. And even when people understand it, they will be resistant if it affects their business," he says. Change is disruptive, and having multiple initiatives happening in parallel compounded the problem at Equifax.

Any successful globalization initiative must have the CEO's unwavering support, but it is important to understand that the CEO also has made a commitment to help each business unit meet its goals. "They're focused on top-line growth, and many of these solutions have the potential to get in the way of meeting their goals. You get a lot of pushback," Webb says.

CIOs have to be patient and realize that they must strike a balance between accomplishing their goals with globalization and being sensitive to the fact that business unit leaders need to meet those P&L targets. "You have to have the flexibility to slow down and work with the business when things happen," Webb says. "We've gone through multiple iterations of thinking we know where we want to go, and then something comes along and derails it."

To maintain support once shared services have been established, and to avoid having business units go rogue, a global IT shared services organization must be highly responsive, Fortner advises. "How do you govern standardization to prevent a creep-back to everyone wanting their own things? You need to run like a business and be so good that they won't want to go elsewhere," he says. At P&G, the business units rate the Global Business Services group's performance every year. When the rating system was first adopted 10 years ago, Global Business Services got a score of 6 on a scale of 1 to 10. "We're over a 9.0 now," Fortner says. "Running as a business has forced us to be competitive."

Getting started means overcoming corporate inertia. "The thing that holds people back is the lack of a bold, compelling need to change," Fortner says. "You get stuck in the old business model, and country managers will want to do it their own way. They have to trust that your organization can come in and do it better, faster and cheaper." ◆

MARK SCOTT / GETTY IMAGES

A Graceful EXIT

What do you do after reaching the pinnacle of IT management? If you're like these CIOs, you leave. Here's where they went, and why. **BY TODD R. WEISS**

GREAT CIOs and IT executives help drive their companies by being agile, innovative managers. They nurture their employees, build talented teams and foster creativity in their people. They try new things. They lead by example.

And then they leave.

Or some do, at least. The CIO role has always been volatile, but above and beyond the normal movement in the industry, the past several years have seen an uptick in anecdotal reports of talented and visionary CIOs leaving their posts. Some head up the corporate ladder to even higher positions or move out of the IT department to take jobs in business units. Others strike out on their own, perhaps pursuing careers as consultants or Web entrepreneurs.

Several CIOs who have made such choices are past honorees in *Computerworld*'s Premier 100 IT Leaders program, which indicates that they're seasoned IT professionals with solid management skills. Since such talented people are forgoing long-term careers as CIOs, it's fair to ask: Do these departures represent a natural progression in the careers of accomplished executives, or do they say something troubling about the working environment of enterprise IT?

There may be clues in these stories of six IT professionals who left jobs as CIOs.

From IT to Operations

"There are different types of CIOs," says Bryan J. Timm. "I'm the type who wants to be an enabler of the business, so personally I needed to move into an operations role."

Timm, 45, is currently chief operating officer at Los Angeles-based fashion company Halston. He came to Halston from another fashion company, Vernon, Calif.-based BCBG Max Azria Group, where he was CIO from 2008 to 2011. Before that, he was CIO at Guess.

"In all my IT roles, I was always pushing the idea that IT could make things better, but often that message fell on deaf ears. By moving into an operations role, there was a bigger chance of being able to make that happen," Timm says.

When he joined Halston, he got such chances in his new role as COO. "We are relaunching a contemporary women's apparel brand," he explains. "I'm able to make every single operational decision" — from choosing a third-party logistics provider to deciding what mobile platform to standardize on — "without needing to consider inherited decisions from prior management. It's a neat opportunity to leverage IT from scratch and make things as efficient as possible."

Tapping his prior tech experience, Timm made the decision out of the gate to outsource maintenance and systems development. "We need to be experts in designing and delivering beautiful garments, not making sure that EDI processed successfully last night."

As a CIO, he didn't have that kind of autonomy, or creative freedom. "Often in the senior executive ranks, IT is viewed as a supporting role and not necessarily as a strategic role for the company. As a result, you find that your ability to play with the big boys is limited," he says.

Six Types of Restless CIOs

Can you tell if a CIO is at risk of leaving – or being pushed out? Analyst Frank Scavo, president of Computer Economics, an IT research firm in Irvine, Calif., says these six types should be on the watch list.

1 **The Irrelevant CIO:** When a CIO focuses too much on ongoing IT support instead of evaluating the direction of the business and using technology to help the company move forward, he is at grave risk of making himself irrelevant. "You can see how a CIO like that becomes a second-tier player in the business," Scavo says. This is a CIO who's a prime target for being pushed out.

2 **The Frustrated CIO:** A CIO might feel as though he has hit a career dead-end when he really wants to make a difference but has been pigeonholed as a glorified IT support technician and isn't given a chance to help set long-term goals and strategy. "He may need to leave, and he may find out that it's more attractive to do what he wants to do as an IT consultant," says Scavo.

3 **The Burned-Out CIO:** Some CIOs are "tired of being in a pressure-cooker, [tired] of having projects to deliver while being starved of funds," Scavo says. "They're always getting beaten up by peers about delivering technology. They are smart people and they want to do a good job, but it's a high-pressure job and they get burned out."

4 **The Bored CIO:** An IT leader may grow restless and start looking for challenges elsewhere if, for example, he has turned around his IT department and now has nothing left to add. "Some CIOs are good at creating new things, but when things become stable, they get bored," says Scavo.

5 **The Underpaid CIO:** A CIO might start to dream about making the big bucks when he sees the fees charged by some of the consultants and advisers he's been hiring. "If he thinks he has the chops to do that, and he feels he has the experience, he can take his work elsewhere," says Scavo.

6 **The Miscast CIO:** Once in a while, a talented IT professional rises to the CIO's position only to realize that he's in the wrong job. That's a tough place to be. "This is a person who maybe came up from software management and came into the job through a promotion," says Scavo. "This CIO really loves the old work and its challenges [and] really wants more of a technical career." When he got the CIO's job, he was probably disappointed to learn that he had to spend most of his time managing people, not technology.

— TODD R. WEISS

From IT to Strategy Officer

Andres Carvallo, 51, was CIO at Austin Energy when he was named a *Computerworld* Premier 100 IT Leader in 2006. At the Austin-based electric utility, he helped lead the creation of one of the first smart electric grids in the nation and reported directly to the CEO during the project.

When the CEO post opened up, he threw his hat into the ring. But Carvallo later chose to withdraw when he realized he lacked mandatory experience with utility rate hearings and negotiations.

That set the wheels in motion. "I thought to myself, do I sit here and continue to polish this diamond that we have built, or do I leave and try to polish other diamonds somewhere else?"

Carvallo took a job as a chief strategy officer at Grid Net, a San Francisco company that builds software to run smart electric grids. Then, in May 2011, he joined Proximetry, a San Diego-based vendor of wireless network performance management systems.

As executive vice president for energy solutions and chief strategy officer at Proximetry, Carvallo is in charge of research, strategy planning and execution, marketing and more. "It's a huge change" from his work as a CIO, Carvallo says. "Here, I'm the expert on grids, the technology and the products. I open doors for the company and help with marketing strategy and business development."

> I thought to myself, **do I sit here and continue to polish this diamond that we have built,** or do I leave and try to polish other diamonds somewhere else?
>
> **ANDRES CARVALLO,** EXECUTIVE VICE PRESIDENT, PROXIMETRY

From IT to Entrepreneur

As director of information services at Jack in the Box, Roger Zakharia was second in command to the CIO when he left in 2008, after 14 years at the fast-food company. Instead of pursuing a CIO role elsewhere, Zakharia, now 51, went into business for himself.

"The possibility of an eventual CIO role wasn't enough for me," he says. "I wanted to run businesses."

Zakharia is doing just that: He's CEO of four startups: Gocar San Diego Tours; ScoreOurBiz.com, an online customer-feedback service for businesses; an IT consulting firm called World Technology Solutions; and Pacific Rent-A-Car.

"Business was in my blood," he says. "It was something I always wanted to explore. I wanted to get involved in businesses, not just in technology."

CIOs must manage change, says Hugos.

From IT to Consultant

CIOs need to pay attention to much more than technology, says Michael Hugos, former CIO of Network Services, a global janitorial and business supplies cooperative.

"If, as the CIO, you can work with your colleagues in marketing, sales and operations, if you can show how things can be merged and improved, you have big opportunities," says Hugos, a 2006 *Computerworld* Premier 100 IT Leaders honoree.

That's the kind of advice Hugos has been giving to CIOs as a consultant since he stopped working as a CIO himself. His position was cut, and he started a consulting and CIO-at-large business, the Center for Systems Innovation in Chicago. He also writes about CIOs and enterprise IT (including an occasional column for *Computerworld*). He's currently working on his eighth book, about IT agility.

These days, Hugos says he would rather coach CIOs than be one again. "The CIO role has changed," he says. "Things like the care and tending of hardware are not as important today because of cloud options. It really is about strategy. We are going through an acceleration of technology and societal changes that no previous time has equaled. I have empathy for what a lot of CIOs are going through."

Jesus Arriaga, 49, who served as CIO for networking vendor Spirent Communications and for auto parts vendor Keystone Automotive Industries, likewise turned to consulting instead of accepting a relocation with Keystone that wasn't to his liking.

"I had always done IT consulting between jobs, so I decided to pursue it full time," says Arriaga, a 2005 *Computerworld* Premier 100 IT Leaders honoree. In July 2007, he started CIO Strategic Solutions, a Glendora, Calif., firm that provides senior CIO consulting and interim CIO services to companies of all types and sizes.

"If I had to nail one thing that has been consistently different, it's that as a consultant CIO, they actually listen to you," Arriaga says. "There is something in the minds of the execs and people I help that creates an openness to listening to the recommendations I'm bringing to the table. I've enjoyed that creativity the most."

When Phil Farr opened his consultancy, Dallas-based Farr Systems, in 2006, he drew upon four years of experience as a CIO at security firm Brink's and 11 years as director of IT at the former Fina Oil and Chemical Co. Immediately after leaving Brink's, Farr, 65, ran a food company for three years and then became a CIO consultant with the Tatum professional services firm in Dallas before heading out on his own.

So why did he leave his role as a CIO?

One reason was the toll of travel. "I traveled in 54 countries for Brink's and throughout Europe for Fina," he says, whereas most of the work he does now is local or at least U.S.-based.

Beyond that, "my ambition was to be a business-person who could run IT or any other needed part of a business," Farr says.

At Farr Systems, he and his staff of 15 offer consulting, coaching and assessment services and provide interim CIOs. "As a CIO, you see your business and your IT organization in very great detail," he explains, but you don't always have access to a wider perspective. "As a consultant, I see how CIOs have similar problems and opportunities, and I get to see some of the best and some of the worst approaches to new technologies and to new management practices."

The broader view, he says, allows him to bring many new ideas to his clients.

Wake-up Call?

These IT leaders' career paths are typical of executives who decide that something's missing from their working lives as time goes by, says Frank Scavo, president of Computer Economics, an IT research firm in Irvine, Calif.

But they can leave a void in the industries they forsake when they seek fulfillment elsewhere, Scavo says. "If some of the best CIOs are leaving to do something else, that's not a good thing" for companies that need innovative, forward-looking IT pros.

Scavo examined this issue in a report titled "Elevating the Role of the CIO." He says employers can try to stop the migration by rewarding IT leaders with fulfilling work and greater responsibilities.

If CIOs aren't rewarded with appropriate levels of work and responsibility, he says, "then I think each person will take a hard look at what they really want to do." ◆

Weiss *is an award-winning IT journalist and freelance writer. You can follow him on Twitter, where his handle is TechManTalking, or email him at toddrweiss@gmail.com.*

What's Next for the CIO Role?

FOLLOWING RECENT NEWS that retailer J.C. Penney eliminated the role of CIO, it's fair to ask what the future holds for the three-letter acronym that some say stands for Career Is Over. Here, ex-execs weigh in:

"Borders thought they didn't need a CIO, and you can see how well that went," says marketing consultant Cathy Hotka, referring to the now-defunct retail bookstore chain that went out of business last year after struggling for several years. "They said, 'We are booksellers; why do we need technology?'" says Hotka, principal of Cathy Hotka & Associates.

Andres Carvallo may have moved from CIO to chief strategy officer, but that doesn't mean he thinks the top IT post is outmoded. "Absolutely not," says Carvallo, of Proximetry, a wireless network performance management vendor in San Diego. "CIOs are incredibly important. The companies that don't have true technology people at the highest levels are usually getting their lunch taken away."

The cloud is "forcing CIOs to re-look at what they're doing," says Jesus Arriaga.

The sea change brought about by cloud computing is changing the role of the CIO, says ex-tech-chief Jesus Arriaga, now a consultant with CIO Strategic Solutions.

As IT departments do more with less using cloud and other services, staffs are shrinking, but "the amount of people you have in your command or supervision does not dictate how effective you are," he says. "The cloud has opened a world of opportunity to help grow a company in more strategic ways than ever before. It's forcing CIOs to re-look at what they're doing."

Beyond that, Arriaga believes the job will merge into dual roles, such as CIO/chief marketing officer or CIO/chief operating officer. "The CIO role is just as important as it has been, but now CIOs need to be technical and have that strong business background, too. Those are the ones who will be successful."

– TODD R. WEISS

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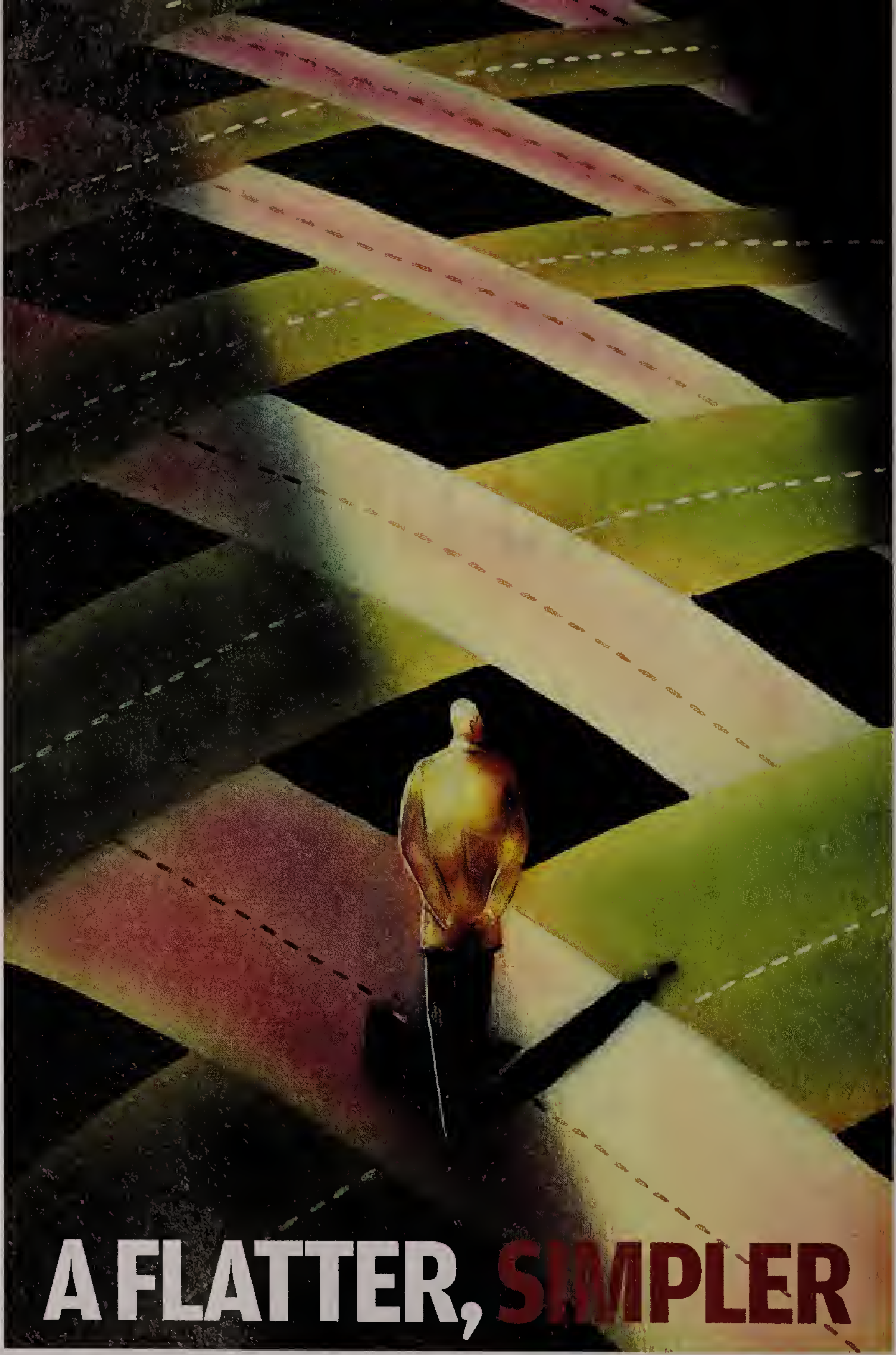

TODD DAVIDSON / GETTY IMAGES

A FLATTER, SIMPLER NETWORK

Data center fabrics reduce complexity and yield economies of scale, but setting them up takes a bit of work. Here's how two organizations got payback.

BY ESTHER SHEIN

WHEN the Government Employees Health Association (GEHA) overhauled its data center to build a fabric infrastructure, the process was "really straightforward," unlike that of many IT projects, says Brenden Bryan, senior manager of enterprise architecture. "We haven't had any gotchas or heartburn, with me looking back and saying, 'I wish I made that decision differently.' "

Based in Kansas City, Mo., GEHA is the nation's second largest health and dental plan, processing claims for more than 1 million people, including federal employees, retirees and their families. The main motive for switching to a fabric model, says Bryan, was to simplify and consolidate operations and move away from a legacy Fibre Channel SAN environment.

When he started working at GEHA in August 2010, Bryan says he inherited a fairly typical infrastructure: a patchwork of components from different vendors with multiple points of failure. The association also wanted to virtualize its mainframe environment and turn it into a distributed architecture. "We needed an infrastructure that was redundant and highly available," he explains. Once the new infrastructure was in place, the plan was to then move all of GEHA's Tier 2 and Tier 3 apps to it and then move the Tier 1 claims processing system.

GEHA deployed Ethernet switches and routers from Brocade, and now, more than a year after the six-month project was completed, Bryan says the association has a high-speed environment and a 20-to-1 ratio of virtual machines to blade hardware.

"I can keep the number of physical servers I have to buy to a minimum and get more utilization out of them," he says. "It enables me to drive the efficiencies out of my storage as well as my computing."

Implementing a data center fabric does require some planning, however. It means having to upgrade and replace old switches with new switching gear because of the different traffic configuration used in fabrics, explains Zeus Kerravala, principal analyst at ZK Research. "Then you have to re-architect your network and reconnect servers."

Moving Flat and Forward

A data center fabric is a flatter, simpler network that's optimized for horizontal traffic flows. In comparison, traditional networks are designed more for client/

server setups that send traffic from the server to the core of the network and back out, Kerravala explains.

In a fabric model, the traffic moves horizontally across the network and virtual machine, "so it's more a concept of server-to-server connectivity," he says. Fabrics are flatter and have no more than two tiers, whereas legacy networks have three or more tiers. Storage networks have featured simpler designs for years, and now data networks need to migrate to that model, Kerravala says.

One factor driving the move to fabrics is that about half of all enterprise data center workloads in Fortune 2000 companies are virtualized, and when companies get to that point, they start seeing the need to reconfigure how their servers communicate with one another and with the network. "We look at it as an evolution in the architectural landscape of the data center network," says Bob Laliberte, an analyst at Enterprise Strategy Group. "What's driving this is more server-to-server connectivity . . . there are all these different pieces that need to talk to each other and go out to the core and back to communicate, and that adds a lot of processing and latency."

Virtualization adds another layer of complexity, he says, because it means dynamically moving things around, "so network vendors have been striving to simplify these complex environments."

> **[Implementing a data center fabric] enables me to drive the efficiencies out of my storage as well as my computing.**
>
> **BRENDEN BRYAN,** SENIOR MANAGER OF ENTERPRISE ARCHITECTURE, GEHA

[redacted]

When Data Centers Can't Scale

As home foreclosures spiked in 2006, Walz Group, which provides document management, fulfillment and regulatory compliance services to clients in multiple industries, found that its data center couldn't scale effectively to take on the growing workloads. "IT was impeding the business growth," says Bart Falzarano, chief information security officer at the Temecula, Calif.-based company.

The company hired additional in-house IT personnel to deal with disparate systems and management, as well as to build new servers, extend the network and add disaster recovery services, says Falzarano. "But it was difficult to manage the technology footprint, especially as we tried to move to a virtual environment," he says. The company also had some applications that couldn't be virtualized and would have to be managed differently. "There were different touch points in systems, storage and network. We were becoming counterproductive."

To reduce the complexity, in 2009 Walz Group deployed Cisco's Unified Data Center platform, a fabric architecture that combines compute, storage, network and management capabilities in a platform designed to automate IT as a service, across physical and virtual environments. The platform is connected to a NetApp SAN Storage Flexpod platform.

Previously, when the company was using HP technology, Falzarano recalls, one of the database nodes went down. This required getting the vendor on the phone, eventually taking out three of the four CPUs, and going through a troubleshooting process that took four hours. By the time the team had ordered and installed the necessary part and had restored normal operations, 14 hours had passed, says Falzarano.

"Now, for the same [type of failure], if we get a degraded blade server node, we un-associate that SQL application and re-associate the SQL app in about four minutes. And you can do the same for a hypervisor," he says.

Easy to Implement

Like the IT executives at Walz Group, IT team leaders at GEHA believed that deploying a fabric model would not only meet the organization's business requirements, but also reduce the complexity and cost of managing the data center. Bryan says the association was able to manage the all-Ethernet environment with a staff of two people; with a different setup, it would have needed additional personnel who were familiar with Fibre Channel.

"We didn't have anyone on our team who was an expert in Fibre Channel, and the only way to achieve getting the claims processing system to be redundant and highly available was to leverage the Ethernet fabric expertise, which we had on staff," he says.

Bryan says the association has been able to trim "probably a half million dollars of capital off the budget" since it didn't have to purchase any Fibre Channel switching, as well as a quarter of a million dollars in operating expenses since it didn't need staffers to manage Fibre Channel. "Since collapsing everything to an Ethernet fabric, I was able to eliminate a whole stack of equipment," says Bryan.

IT has now utilized the fabric for its backup environment with software from CommVault. Bryan says the association is seeing performance of about a terabyte an hour of throughput on the network, "which is probably eight to 10 times greater than before" the fabric was in place.

Today, all of GEHA's production traffic is on the fabric, and Bryan says he couldn't be more pleased with the infrastructure. He notes that scaling it out isn't an issue and is one of the major advantages of converged fabric and speed. GEHA is also able to run a very dense workload of virtual machines on a single blade. "Instead of having to spend a lot of money on a lot of blades, you can increase the ROI on those blades without sacrificing performance," says Bryan.

Laliberte says he sees a long life ahead for data center fabrics, noting that this type of architecture "is just getting started."

"If you think about complexity and size, and you have thousands of servers in your environment and thousands of switches, any kind of architecture change isn't done lightly and takes time to evolve," he says. Just as it took time for a three-tier architecture to evolve, it will take time for three-tier to get broken down to two-tier. Flat fabric is the next logical step, Laliberte says, adding, "These things get announced and are available, but it still takes years to get widespread deployments." ◆

Shein *is a freelance writer and editor. She can be reached at eshein@shein.net.*

Security Manager's Journal

MATHIAS THURMAN

Trouble Ticket

At issue: A competitor is sending messages to the customer email addresses in the company's Salesforce.com database – including some dummy addresses set up for testing purposes.

Action plan: Use logs and email archives to find out whether an ex-employee stole the data.

The Sales Rep & the Honey Tokens

A competitor suddenly seems to know a lot about the company's customers. Is a former employee involved?

WHEN EMPLOYEES have easy access to data, you have to trust them to do the right thing, but you also need ways to verify that they are doing the right thing. That's why I think it's important to invest in things like data leak prevention. We're still tuning our DLP installation, but it nonetheless paid off this week, as did something referred to as "honey tokens."

Here's what happened. We use Salesforce.com as the single repository for information about all of our current customers, potential sales opportunities, sales forecasts and more. It's all highly sensitive material and not anything we'd like our competitors to get their hands on.

That's why one of our marketing executives was worried when she called me into her office earlier this week. She had received a marketing email from one of our competitors. The interesting thing about this email was that it was sent to all of the dummy, or "honey token," email accounts that we had set up in Salesforce for testing purposes. The implication was that the email had also gone to all of our legitimate customers and that this competitor somehow had gotten access to the information in our Salesforce deployment.

An Inside Job

We spread the word about this discovery to our sales and marketing management teams, and someone pointed out that a sales representative in one of our largest Latin American offices had recently resigned to take a position at the very competitor that had sent the marketing emails. Could it be that simple? Could this ex-employee have been careless enough to download contacts from Salesforce to use in his new job?

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If so, I thought, then he might have been stupid enough to log in from the office before he stopped working for us. I asked our Salesforce administrators to pull the access logs for the past five days. Some quick Excel filtering revealed that, sure enough, this guy had accessed Salesforce at 4 p.m. on his last day of work!

All right, what did he do during this session? Learning that would require detailed log information, which meant opening a support ticket with Salesforce. When we got the logs a few days later, we saw that the sales rep had run several reports to export complete contact information for all of our customers, as well as a list of potential opportunities and sales pipeline data.

I wanted to know more. I had my security analyst pull emails out of the archives. (We have enabled journaling in our Microsoft Exchange corporate email, so that all emails, both sent and received, are captured, even if they were deleted.) Nothing there. However our recently deployed DLP tool does have rules for detecting customer account numbers. Making use of that feature, we found several unencrypted webmails in which the sales rep himself sent himself .zip files containing all the exported reports. Although we didn't find an email in which those files were sent to our competitor, we did come across one in which he mentioned that he would be "bringing over" his customer portfolio.

At that point, I gathered my evidence and provided it to our legal counsel and human resources department so they could take action.

And next for the security team? I will be meeting with the owners of our other applications to propose the expansion of the use of honey tokens. And this incident is just what I needed for my 2013 budget planning, which will surely include proposals for additional investment in our DLP infrastructure. ◆

This week's journal is written by a real security manager, **"Mathias Thurman,"** *whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com.*

> **Could this ex-employee have been careless enough to download contacts from Salesforce?**

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PRESTON GRALLA

June 2012: The Month The Cloud Got Real

> Microsoft, Apple and Google have long seen that their future is in the cloud. Now they see their present there as well.

IF YOU'RE LOOKING for a turning point in the inevitable shift away from client computing to cloud computing, last month might be the best choice. It was the month that cloud computing finally became real.

Why June 2012? As Quentin Hardy pointed out in the *New York Times*, June saw the first Microsoft-branded tablet: A device called the Surface that's powered in part by Microsoft's Windows Azure cloud technology. Hardy also noted that June was the month in which Google announced the 7-in. Nexus 7 tablet, which uses Google's myriad cloud-based services, and Apple previewed iOS 6, which is powered by Apple's cloud services and iCloud.

Notice that there were no big PC announcements. No new chip breakthroughs. No new versions of major pieces of client-based software — and aside from Office, what major pieces of client-based software are left, anyway?

Microsoft's and Google's new tablets are certainly outpowered by any garden-variety PC, so don't expect them to be benchmark-breakers. But they don't need to be.

For some time, all three companies have recognized that their future lies in the cloud. But as the June announcements show, they see their present there as well. Google is the most notable example. The Nexus 7 tablet is priced aggressively, at $199. Google may not make any money on the device itself; any profit will come from cloud-based services, largely via advertising, although possibly via some paid services as well. Even Google's director of hardware, Matt Hershenson, is on board with that vision. At Google I/O 2012, he told the crowd that we're entering an era in which consumer electronics is the hardware, the software *and* the cloud.

Although the June announcements largely target consumers, the enterprise isn't being left out. Microsoft's entry was the most serious cloud play for corporate IT. Its Surface Pro, an Intel-based tablet that runs the full-blown version of Windows 8, will run Office like a PC and will likely feature enterprise deployment tools. Tellingly, Microsoft sees it not just as an adjunct to a desktop or a laptop. It sees it as potentially replacing laptops, especially for mobile workers, because its cover doubles as a keyboard.

Even Google's inexpensive Nexus 7 tablet could be of use in the enterprise. As with other Android devices, you'll run it by signing in with a Google account, which means it's tied directly to Gmail and Google Docs, both of which are aimed straight at businesses. Google is also expected to eventually release a larger, 10-in. tablet as well.

And while Apple has never been as enterprise-focused as Microsoft and Google, it's continuing its strategy of amassing enough support from consumers that employers will bow to employee demands that they support the iPad and iPhone — furthering the BYOD (bring-your-own-device) movement. Apple is also making moves to acknowledge that it can't thrive on hardware alone. It has replaced Google Maps in the newest version of iOS with its own Maps app. Apple may claim that its goal is to provide a superior user experience, but it really comes down to this: Rather than allowing Google to reap the benefits of location-based advertising, Apple hopes to do that with its own app.

We buried big iron long ago. The events of June 2012 may have put little iron — PCs and their ilk — on its deathbed. From here on in, it's all about the weightless cloud. ◆

Preston Gralla is a *Computerworld.com* contributing editor and the author of more than 35 books, including *How the Internet Works* (Que, 2006).

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ASK A PREMIER 100 IT LEADER

Edward Martin

The deputy CIO at George Washington University answers questions about pay equity, **indispensable skills** *and how to become a CIO.*

My company has fallen well behind the average compensation in our area for several IT positions. I've lost many people in my group, and this trend seems to be accelerating. But when I've talked to management about bringing our pay in line with local norms, I've been told that we just don't have the budget for increases. How can I argue my point more persuasively? Many IT leaders face this challenge. The answer depends upon the IT area with which you are struggling to keep up with the market. For areas that are becoming more commoditized, such as data networking, data center, help desk, imaging and deskside support, present alternatives that may need to include outsourcing or external help. Frame options with an attention to service levels and impact. For areas that are more critical to your business and processes, such as business analysis, project management, systems design, process management or contract management, frame requests in terms that management will understand. Propose a plan to bring pay in those areas up to market rates. Managers generally embrace plans that either emphasize shareholder value or minimize risk. Most important, base your proposal or recommendation on facts, not emotions or opinions. Your HR department can provide data about salary levels.

If you were required to cut your staff by 20%, which skills or traits would you most want to hold on to? I would want the skills and traits that are aligned with a deep understanding of the business and that position the staff and teams to do more with less. For skills, I would want to retain business analysts, systems designers, project managers and process managers. For traits, I would retain multiskilled personnel who demonstrate strong critical thinking and good innovation skills. For management and leadership traits, I would want to retain people who are not only accountable and able to exhibit good managerial courage, but also selfless – and show it through actions and words. An often undervalued attribute whose value increases dramatically in a downsized IT organization is communication. People who can comprehend and explain technical concepts and also translate business terms for and from senior management are invaluable.

I'm a vice president of information services who has always prided myself on my willingness, and my ability, to get into the trenches with my team. I'm up to date on technology. I've always thought this was a great quality in a leader, so I was shocked when I was informed that I wouldn't be our next CIO because I needed to improve my leadership skills. I've had to rethink my approach, and I'd like a second opinion about my current approach. First, develop people to fill your current role. Delegate tasks to them, and hold them accountable for plans, objectives, growth and deadlines. Second, focus on gaining a strong understanding of the business and aligning plans with it. Partner with non-IT leaders to make arrangements for shared governance and to set plans and priorities. Third, ask for an anonymous 360 review. If you are really focused on preparing yourself for the next level, you need to gain an understanding of the many perceptions of your strengths and weaknesses. The report may include things you don't want to hear, but you need to hear them. Be open-minded about your own skills as well. Management saw something in the person they chose to be CIO that they didn't see in you. Ask your new boss for advice. He or she will need to count on you. Complement the new boss and shine.

If you have a question for one of our Premier 100 IT Leaders, send it to **askaleader@computerworld.com**, and watch for this column each month.

SHINY HAPPY GRADS

Recent college graduates who have jobs in IT are happy with their work experiences, according to a survey by TargetJobs, a U.K.-based website that aims to help graduating college students find jobs. The survey sample was small (129 recent grads), but the share of respondents who said that they were content with their work lives (87%) was large enough to suggest that most recent graduates are indeed pleased that they chose jobs in IT. In addition, 67% of the respondents said that they expect to stay in IT for the long term, with 37% anticipating that they will remain with their current employers for more than five years.

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SHARKTANK

TRUE TALES OF IT LIFE AS TOLD TO SHARKY

HAL MAYFORTH

Unclear on the Concept

User in one of this manufacturing company's warehouses calls IT because the copier needs toner. "It's raining fairly heavily, so I sigh and carry the toners over to the area for the copier," says the pilot fish who handles the request. "When I arrive, I notice that the copier in question and the computer next to it are soaked due to a leak in the building. After having a near coronary because of the amount of saturation the copier has withstood, I unplug all the equipment and mention to another user close by that this needs to be repaired. He says, 'Yeah, we've told them. But now we just cover the stuff as it's running during the rain.' Fast-forward two hours. The user that requested the toner calls me. User: My copier isn't working. Me: That's because I unplugged all the stuff so you won't get electrocuted when you use it. User: Yeah, I noticed all the water inside the copier when I lifted the lid to make a copy. I saw it wasn't on so I called you."

Legit? Yes. OK? No.

At the construction company where he works, this pilot fish is responsible for dealing with network problems when they crop up on construction sites. "One of our larger job sites called in and said that everything on the network was running extremely slowly and that we needed to fix it ASAP," fish says. "I proceeded to look into it further. Connectivity was OK, but ping times across the network were all over the place. After looking at some network usage charts, I noticed a handful of users at the job site transferring large amounts of data – all from the same place. I pinpointed the location as a hosting site for videos. I informed the office manager on-site and told her that a handful of people were watching a large video that was chewing up bandwidth on their portion of the network. She replied, 'Oh, well, that's OK; the video is legit.' They had filmed a high-def video at the job site over the weekend, posted it online, and emailed everyone a link to go watch it."

Aha!

Pilot fish gets a call about a printer that isn't working. "When I get there, I replace the drive unit to see if that solves the problem," he says. "When the printer is turned on, it makes a horrible sound and shuts down. Confused, I recheck my work and determine that everything is fine. An employee walks in and asks how the repair is going. I say it will be a tough diagnosis. Employee says, 'I'm not surprised. You're the fourth tech that's been out to fix that printer – and the last guy dropped it on the floor and left.' "

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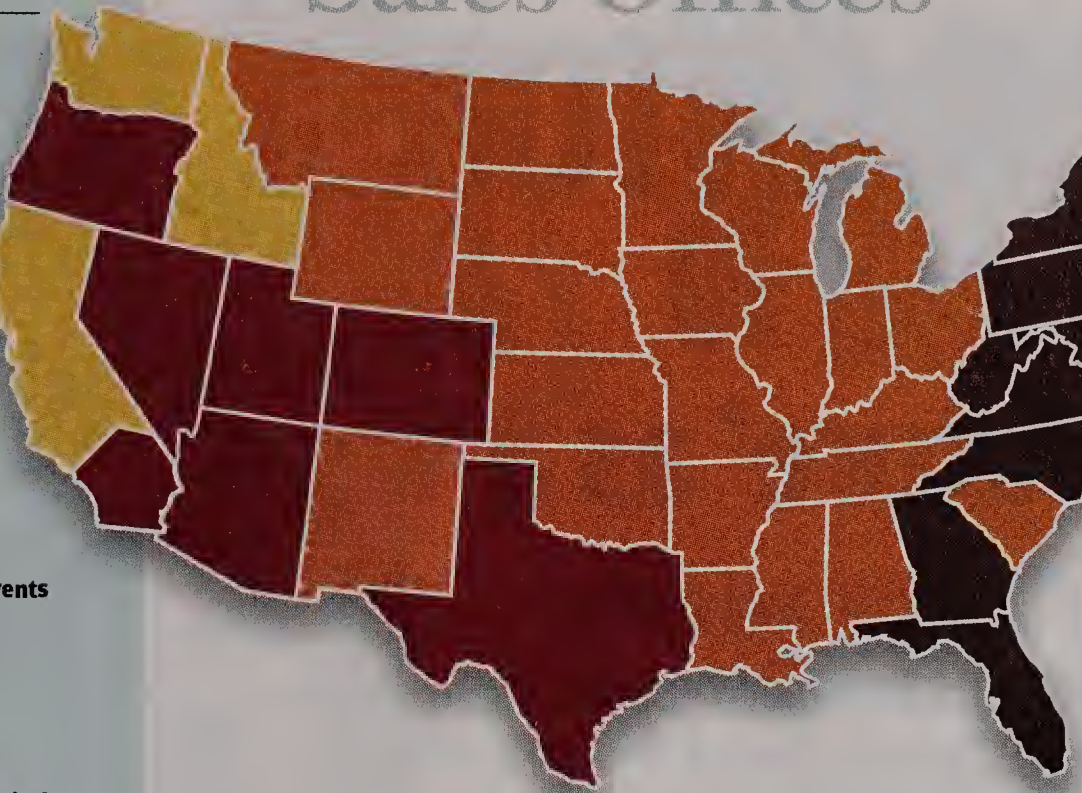

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THORNTON A. MAY

'Future' as a Verb

> Organizations that will prosper in the future are led by people who have imagined a future they want to live in.

RAY BRADBURY (1920-2012), the science fiction pioneer and poet laureate of the Space Age, once remarked, "I'm not a futurist. People ask me to predict the future, when all I want to do is prevent it."

I, on the other hand, am a futurist, and I contend that the future is not something to be prevented, but something to be understood and prepared for. More than that, I would like to put in front of the switched-on, hardworking *Computerworld* readership the premise that they should think of *future* not as a noun (that is, a place or thing), but as a verb — a mode of behavior.

In executive development programs at Ohio State University, the University of Kentucky, Florida State College at Jacksonville and the Olin College of Engineering, I frequently invoke the metaphor of the "New World" to get senior executives thinking about the future. In doing so, we inevitably end up discussing Christopher Columbus, the über-New-Worlder.

On at least one dimension, Columbus serves as a positive role model for those who would use *future* as a verb rather than a noun and who contend that the future is not something to be prevented and/or accommodated. Columbus believed that the future existed and that it would be fundamentally different from the status quo. This is Futuring Skill No. 1: future awareness. The inverse of future awareness (belief in a future that is different only insofar as it is better than the present) regresses IT executives to a medieval mindset mired in perpetual sameness.

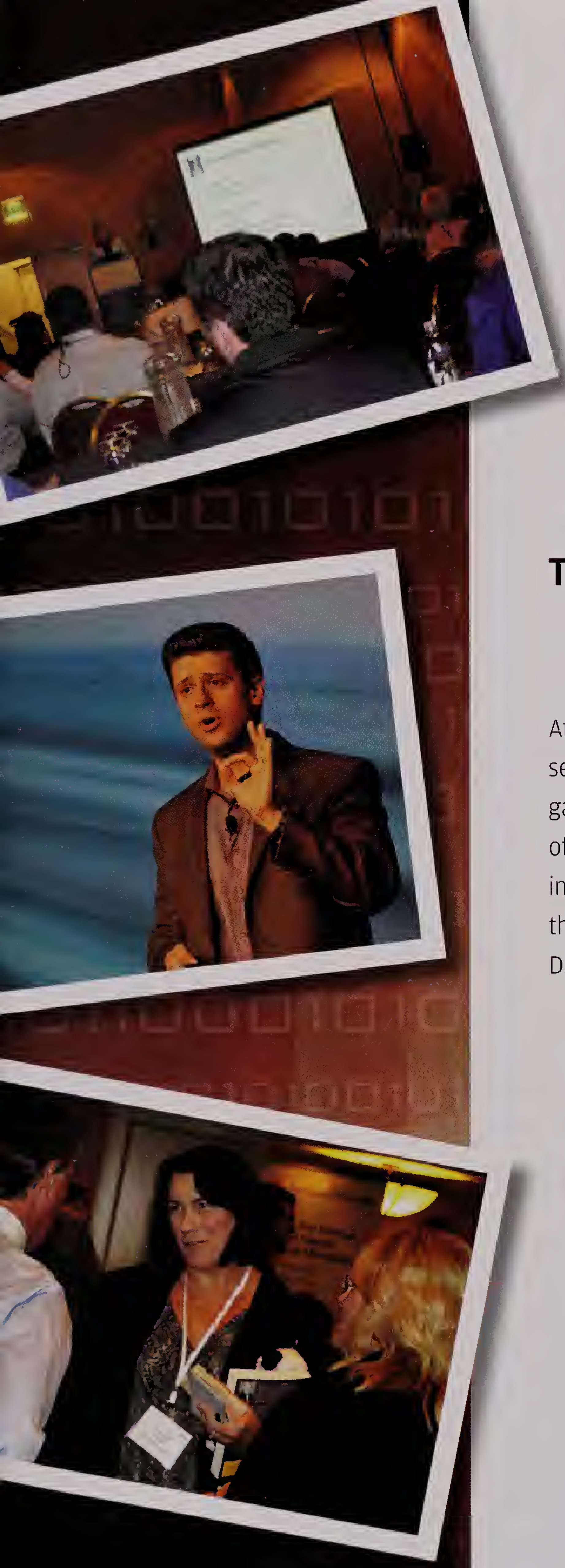
To drive this point home, I ask executive education audiences whether they think Ronald Reagan's "Mr. Gorbachev, tear down this wall" speech of 1987 mattered. I don't do that to explore geopolitical power dynamics of the past. I do it to highlight the critical role leaders have in putting ideas into play. Prior to Reagan giving voice to the idea that the Berlin Wall should come down, Western leaders generally accepted the Soviet Union's domination of Eastern Europe. Reagan, one East German said, "changed our consciousness," giving people real belief that "things could be different."

The future will be different. It is up to us to determine the shape, trajectory and pacing of that difference. More than just being aware that there is a future, those who would use *future* as a verb need to have a preference for the kind of future they want to experience. How do you want the future to be different? This is Futuring Skill No. 2: future preference. The organizations that will prosper in the future are led by people who have imagined a future they want to live in.

This kind of "let's imagine the future and make it happen" thinking does not get much coverage in the press. Being utopian (or even modestly upbeat) is very much out of favor these days. For example, Simon Ings, managing director of the new digital quarterly *New Scientist*, and Sumit Paul-Choudry, the e-magazine's editor in chief, darkly commented, "We don't know where we're going, and we don't know how we'll get there. There are no maps, the brakes don't work, the driver's blind and the doors have no handles. Enjoy the ride." Equally bleakly, Robert Zoellick, the outgoing World Bank president, recently told Charlie Rose, "There's no shortage of things that can give you insomnia."

These people are making my point. It is time we in IT stop wallowing in nightmares and start delighting in dreams. The future that just happens (*future* as a noun) is not pretty. It is up to us to use *future* as a verb to imagine and then create a world we want to live in. ◆

Thornton A. May is author of *The New Know: Innovation Powered by Analytics* and executive director of the IT Leadership Academy at Florida State College in Jacksonville. You can contact him at thorntonamay@aol.com or follow him on Twitter (@deanitla).



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